

REQUEST FOR RECONSIDERATION

Claims 1, 3-8 and 10 were pending in this patent application. Claims 1, 3-8 and 10 stand rejected. Claims 16 and 17 have been added. The currently pending claims are Claims 1, 3-8, 10, 16 and 17. Applicants believe all previously pending claims are allowable over the prior art of record. However, to advance this case expeditiously to issuance, Claim 1 has been amended to clarify the invention. These amendments are not considered necessary for patentability. In view of the foregoing amendments and the following remarks, Applicants respectfully requests reconsideration and favorable action in this Application including an indication of the allowable nature of all pending claims.

REMARKS

Rejections under 35 U.S.C. § 102

Claims 1, 3-8 and 10 stand rejected under 35 U.S.C. § 102(e) as allegedly being anticipated by U.S. Patent 6,337,109 to Yamazaki, et al. ("*Yamazaki*"). Applicants respectfully request reconsideration and allowance of Claims 1, 3-8 and 10 for at least the following reasons.

Yamazaki states that the conventional technique of sputtering crystallization catalytic element such as nickel onto amorphous silicon has a difficulty in precisely controlling the thickness of the deposition film and it tends to damage the amorphous silicon. *See* Col. 1, line 59 through Col. 2, line 8. *Yamazaki* seeks to improve the uniformity of the nickel layer by introducing nickel in a state of organic metal compound and forming a monomolecular layer of organic metal compound onto amorphous silicon (a-Si) layer. The monomolecular layer of the organic metal compound absorbed onto the silicon film is decomposed by light irradiation in order to make the nickel compound more stable and less volatile.

By contrast, the present invention forms a metal layer on an amorphous silicon film by sputtering. Rather than the chemical deposition technique used by *Yamazaki*, the present invention employs a physical deposition method of sputtering.

It is further stated that *Yamazaki* teaches the steps of heating substrate (Col. 9, line 24) while depositing a metal layer (Col. 9, line 32) to induce low-temperature crystallization of a-Si.

Applicants respectfully submit that *Yamazaki* heats the substrate to a certain temperature in order to enlarge the ALE window. *See* Col. 7, lines 20-22. As shown in *Yamazaki* Fig. 9, the ALE window is the range of partial pressure B of the organic metal compound in which monomolecular absorption layer is formed. *Yamazaki* heats the substrate in order to make the range B where the monomolecular absorption layer is formed on a-Si as large as possible with respect to the given organic metal compound. As such, in *Yamazaki*, the substrate is heated in order to enhance the uniformity of the absorbed organic metal layer.

On the other hand, the present invention recited in Claim 1 involves sputtering a metal layer onto a-Si. As pointed out by *Yamazaki*, sputtering may not control monomolecular or monatomic deposition of a metal onto a-Si and the uniformity of the deposition is not affected by the temperature of the a-Si. Therefore, in the present subject invention, substrate heating has nothing to do with the uniformity with the metal layer. Rather, the present invention recited in amended Claim 1 involves "heating said substrate... to form an oxidization-stable metal silicide film."

Moreover, in *Yamazaki*, the substrate is heated to a temperature which facilitates monomolecular absorption of organic metal onto a-Si. When the organic nickel compound is absorbed onto the a-Si film, the nickel does not react with the a-Si but remains in the state of an organic nickel compound. Nickel may react with the a-Si only after the organic nickel compound is decomposed by light irradiation and fixed to the a-Si film. *Yamazaki* states that when the substrate temperature is raised, the monomolecular absorption layer is completely re-separated from the a-Si film except for the portions where the nickel compound was decomposed by light irradiation. *See* Col. 10, lines 27-31. This means that the organic nickel compound attached to the a-Si film remains in the state of an organic metal compound until it is decomposed by light irradiation, and it may re-separated from the a-Si film at a higher temperature. In *Yamazaki*, the substrate heating does not cause the nickel to react with the a-Si because the nickel still remains in the organic compound state. *Yamazaki* explains that nickel silicide is formed only after the nickel organic compound is decomposed by light irradiation and the substrate is further heated to a temperature about 450°C or over in a nitrogen atmosphere. *See, e.g.,* Col. 11, lines 1-17. Thus, it is clear that the substrate heating process of *Yamazaki* has no bearing on the metal silicide forming process recited in Claim 1 of the present application.

Yamazaki controls the substrate temperature to facilitate the formation of a monomolecular layer of an organic metal compound. This technical purpose is valid only when organic metal deposition technique is used. This technical feature is irrelevant to the present invention, which employs a physical deposition method of sputtering.

In *Yamazaki*, the substrate heating does not cause decomposition of the organic metal compound before it is subject to light irradiation. Accordingly, the substrate heating does not cause the formation of nickel silicide. On the other hand, in the present invention, the nickel physically deposited onto the a-Si film reacts with silicon to form a nickel silicide by means of the substrate heating.

As such, both the technical object and results of the substrate heating are fundamentally different between *Yamazaki* and the present invention. Therefore, the invention recited in amended Claim 1 and its dependant claims are patentably distinguishable from anything disclosed in or suggested by *Yamazaki*. Thus, Applicants respectfully request that the Examiner's rejections be withdrawn.

New Claims

New Claims 16 and 17 have been added to recite that the metal layer (recited in Claim 1) is nickel and palladium, respectively.

CONCLUSION

Applicants respectfully submit that this Application is in condition for allowance and favorable notice thereof is requested. If there are any matters which can be discussed by telephone to further the prosecution of this Application, Applicants invite the Examiner to call the undersigned attorney at the number below at the Examiner's convenience. Although no fees are believed due, the Commissioner is hereby authorized to charge any fees or credit any overpayment to Deposit Account No. 02-0384 of Baker Botts L.L.P.

Respectfully submitted,

BAKER BOTTS L.L.P.
Attorneys for Applicants

A handwritten signature in black ink, appearing to be 'JB' followed by a long horizontal stroke.

Jay B. Johnson
Reg. No. 38,193

CORRESPONDENCE ADDRESS:

Baker Botts L.L.P.
2001 Ross Avenue, Suite 600
Dallas, Texas 75201-2980
Phone: 214.953.6431
Fax: 214.661.4431

Date: July 23, 2003